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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,553	04/03/2006	Hidekuni Murakami	52433/838	2069
26646 7590 03/11/2011 KENYON & KENYON LLP ONE BROADWAY NEW YORK, NY 10004				
EXAMINER YEE, DEBORAH				
ART UNIT 1733		PAPER NUMBER		
MAIL DATE 03/11/2011		DELIVERY MODE PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/574,553

## Applicant(s)

MURAKAMI, HIDEKUNI

## Examiner

Deborah Yee

## Art Unit

1733

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-7, 11-16, 22 and 23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 11-16, 22 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 11/12/10
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments filed March 2, 2011, with respect to claims 1 to 7, 11 to 16, 22 and 23 rejected under 35 U.S.C. 103(a) over Reason B in English translation of Japanese Office action dated July 29, 2009 issued in corresponding Japanese Application No. 2005-5414520 (NPL) dated November 2, 2010 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of up dated search.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-7, 11-16, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over US No. Patent No. 7,513,959 to Takashima et al. ("Takashima") alone or in view of US Patent 5,0841,112 to Tachino et al. ("Tachino").

4. Takashima on line 3 of columns 9 to line 47 of column 11 discloses a non-oriented electrical steel composition having constituents whose alloy wt% ranges overlap those recited by instant claims 1 to 3 as shown in table below; and such overlap in alloy wt% range establishes a prima facie case of obviousness because it would be obvious for one skilled in the art to select the presently claimed alloy wt% ranges over

the broader disclosure of cited art since cited art teaches the same utility as present invention to make non-oriented electrical steel with superior magnetic properties and high strength, see MPEP 2144.05(I).

Element	Instant Claims (weight percent)	(Takashima) (weight percent)	Overlap (weight percent)
C	0-0.06	0-0.02	0-0.02
Si	3.6-6.5	0-4.5	3.6-4.5
Mn	0.05-3.0	0-3.0	0.05-3.0
P	0-0.3	0-0.5	0-0.3
S or Se	0-0.04	0-.01	0-0.01
Al	0-0.005	0-3.0	0-0.005
Cu	0.6-0.8	0.2-4.0	0.6-0.8
Cr	0-4.5	0	0
N	0.0031-0.0301	0-0.01	0.0031-0.01
Nb	0-8.0	0	0
Ti	0-1.0	0	0
B	0-0.01	0.001-0.01	0.001-0.01
Ni	0-5.0	0-5.0	0-5.0
Bi, Mo, W, Sn, Sb, Mg, Ca, Ce, La, and/or Co	0-0.05 total	Sn: 0.002-0.5; Sb:0.002-0.5; Ce/La : 0.001-0.01; and/or Co 0.2-5.0	0-0.05 total
Fe	balance	balance	balance

5. Steel of Takashima in claim 1 contains Cu precipitates having an average particle size of 1 to 20 nm and therefore meets “a metal phase comprised of Cu having a diameter of 0.1  $\mu$ m or less” recited by one or more instant claims.
6. Moreover, steel of Takashima on lines on 1-3 of column 18 exhibits a crystal grain diameter of 20 to 200  $\mu$ m which overlaps and teaches a portion of recited crystal grain diameter of 30 to 300  $\mu$ m in one or more instant claims.
7. In regard to process of making, Takashima in paragraph bridging columns 18 and 19, subjects steel to a heat treatment to precipitate Cu phase comprising the steps

of heating to a temperature of 400°C to 650°C for 20 seconds to 1,000 hours which meets "heat treatment at a temperature range of 300°C to 650°C for 5 seconds or more" recited by one or more instant claims.

8. Also composition of Takashima in claim 1 contains a Mn range of 3% or less which encompasses and teaches a Mn range of 0.5 to 1.2% recited by instant claim 22.

9. Takashima differs from present invention for the reasons stated below.

10. Takashima does not teach a metal phase comprised mainly of Cu in steel having a number density of 20/  $\mu\text{m}^3$  or more wherein the number density is increased by 10 fold or more, a tensile strength increased by 30 MPa or more or hardness increased by 1.1 fold or more after heat treatment. Nevertheless, such properties are presumed inherent since Takashima closely meets Applicants' composition and process of making and in absence of evidence (e.g. by comparative test data) to the contrary, see MPEP 2112.01 wherein it has been held that when the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent.

11. Takashima does not teach steel sheet containing an Nb carbide or nitride as required by instant claim 7. Nonetheless, it is common practice to add small amounts of Nb to combine with C and/or N to form nitrides or carbides to strengthen analogous non-oriented electrical steel sheet as evidenced by Tachino on lines 28 to 55 of column 6. Since high strength is desired and sought by Takashima then it would be obvious for one skilled in the art at the time the invention was made to modify steel of Takashima in view of Tachino by incorporating Nb carbide or nitride.

***Priority***

12. Takashima has an international file date of December 3, 2003 which is after Applicant's foreign priority document 2003-347113 file date of October 6, 2003. Applicant, however, cannot rely upon the foreign priority papers to overcome rejection to Takashima because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.
13. Claims 1 to 7, 11 to 16 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,084,112 to Tachino et al. ("Tachino") in view of machine-English translation of Japanese patent 10-219396 related WO99/47718 to Okayama et al. ("Okayama")
14. Tachino in claim 1 discloses a non-oriented electrical steel composition having constituents whose alloy wt% ranges overlap those recited by instant claims 1 to 3 as shown in table below; and such overlap in alloy wt% range establishes a prima facie case of obviousness because it would be obvious for one skilled in the art to select the presently claimed alloy wt% ranges over the broader disclosure of cited art since cited art teaches the same utility as present invention to make non-oriented electrical steel with superior magnetic properties with high strength, see MPEP 2144.05(I).

Element	Instant Claims (weight percent)	(Tachino) (weight percent)	Overlap (weight percent)
C	0-0.06	0-0.04	0-0.04
Si	3.6-6.5	2.0 -< 4.0	3.6 -<4.0
Mn Ni	Mn: 0.05-3.0 Ni: 0-5.0	Mn + Ni: 0.3-10	0.3-8.0
P	0-0.3	0-0.2	0-0.2
S or Se	0-0.04	impurity	impurity

Al	0-0.005	0-2.0	0-0.005
Cu	0.6-0.8	0	none
Cr	0-4.5	0	0
N	0.0031-0.0301	0-0.005	0.0031-0.005
Nb	Nb: 0 - 8	Nb+Zr/8(C+N): 0.1-1.0	0.1-1.0
Ti	0-1.0	$0.4 < (Ti+V)/4(C+N) \leq 4.0$	0-1.0
B	0-0.01	0.0010-0.0070	0.001-0.007
Bi, Mo, W, Sn, Sb, Mg, Ca, Ce, La, and/or Co	0-0.05 total	0	0
Fe	balance	balance	balance

15. In addition, steel of Tachino on lines 28 to 55 of column 6 contains Nb carbides and nitrides for increasing strength same as instant claim 7 and a Mn range of 0.3-10% which includes 0.5 to 1.5% Mn recited by instant claim 22.

16. Tachino differs from present invention for the reasons stated below.

17. Tachino does not contain 0.6-0.8% Cu and a metal phase of Cu having a diameter of 0.1  $\mu\text{m}$  or less formed by aging at 300°C to 650°C for 5 seconds or more as required by instant claims. Nevertheless, Okayama in abstract and ¶ 0012 teaches that high strength of more than 60 Kgf/mm<sup>2</sup> without deteriorating magnetic properties can be obtained when Cu is added to low carbon steel and fine Cu phase having nanometer order is precipitated by means of aging at 300°C to 700°C, which is the same technical concept as present invention (see lines 26-30 on page 3 of instant specification). Since strength without degrading magnetic properties is desired and sought by Tachino (lines 10-40 of column 4) then it would be obvious for one skilled in the art to modify the steel

of Tachino by incorporating 0.6-0.8% Cu and aging to form Cu precipitation in the nm order in view of Okayama.

18. Tachino does not teach steel having a metal phase comprised mainly of Cu in steel having a number density of  $20/\mu\text{m}^3$  or more wherein the number density is increased by 10 fold or more, a tensile strength increased by 30 MPa or more or a hardness increased by 1.1 fold or more after heat treatment or an average grain size at 30 to 300  $\mu\text{m}$ . Nonetheless, such properties are presumed inherent since Tachino in view Okayama closely meets Applicants' composition and process of making, and in absence of evidence (e.g. by comparative test data) to the contrary. See MPEP 2112.01 wherein it has been held that when the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent.

19. For the foregoing reasons, claims would not patentably distinguish over cited art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on monday-friday 6:00 am-2:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Deborah Yee/  
Primary Examiner  
Art Unit 1733

/DY/